

Quality Management	Form: Inspection certificate HC Pro, HC Plus	
WAL_7.6_241_F_EN	Editor: C. Cyrulies	
	Approver: C. Sachs	Valid from: 01 Dec 2018
	Owner: C. Sachs	Vers./ Rev.: 02.00

**Walter Maschinenbau GmbH**

Jopestr. 5  
D-72072 Tübingen

Inspection certificate: Jul-05-2021\_2081-0705

**Quality inspection certificate DIN 55 350-18-4.1.2.**

<b>Manufacturer</b>	Walter Maschinenbau GmbH
<b>Type</b>	Helicheck Plus
<b>Serial number</b>	2081-0705
<b>Year of manufacture</b>	2017
<b>Client</b>	Miltera machining research Corp.
<b>Order number</b>	CS42117195
<b>Department / name</b>	Measuring
<b>Street</b>	60 Struck Crt
<b>City</b>	Cambridge, On
<b>Issuer</b>	Danny Lebel
<b>Date</b>	7/7/2021



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### 1. Diameter measurement (horizontal) backlight camera 1

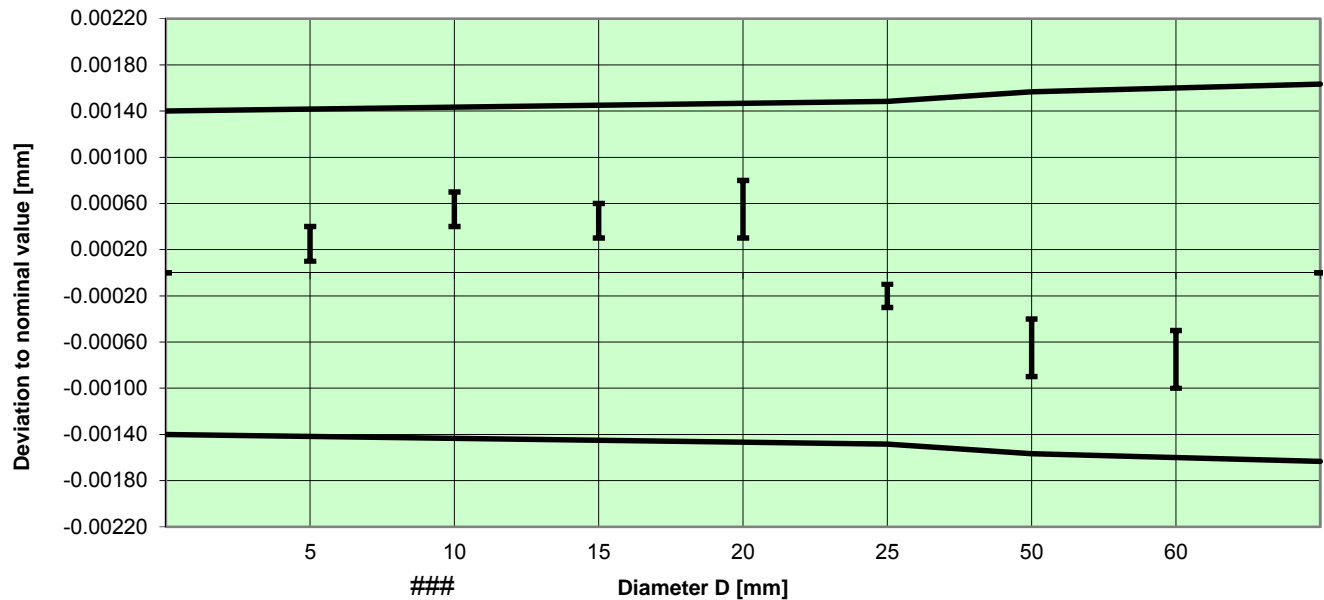
One dimensional measurement uncertainty (diameter)

$$\text{Tolerance } E1(D) = 1.4 \mu\text{m} \frac{D[\text{mm}]}{300.00} \mu\text{m}$$

Range of measurements (minimal required range  $R_{min} < 1 \mu\text{m}$ ):

$$R = 0.5 \mu\text{m}$$

**Measurement uncertainty according VDI 2617 sheet 6:**



### Evaluation: Machine meets specification according manufacturers standard

Completed by:	Name	Date	Signature
	Danny Lebel	7/7/2021	

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## 2. Length measurement (vertical) backlight camera 1

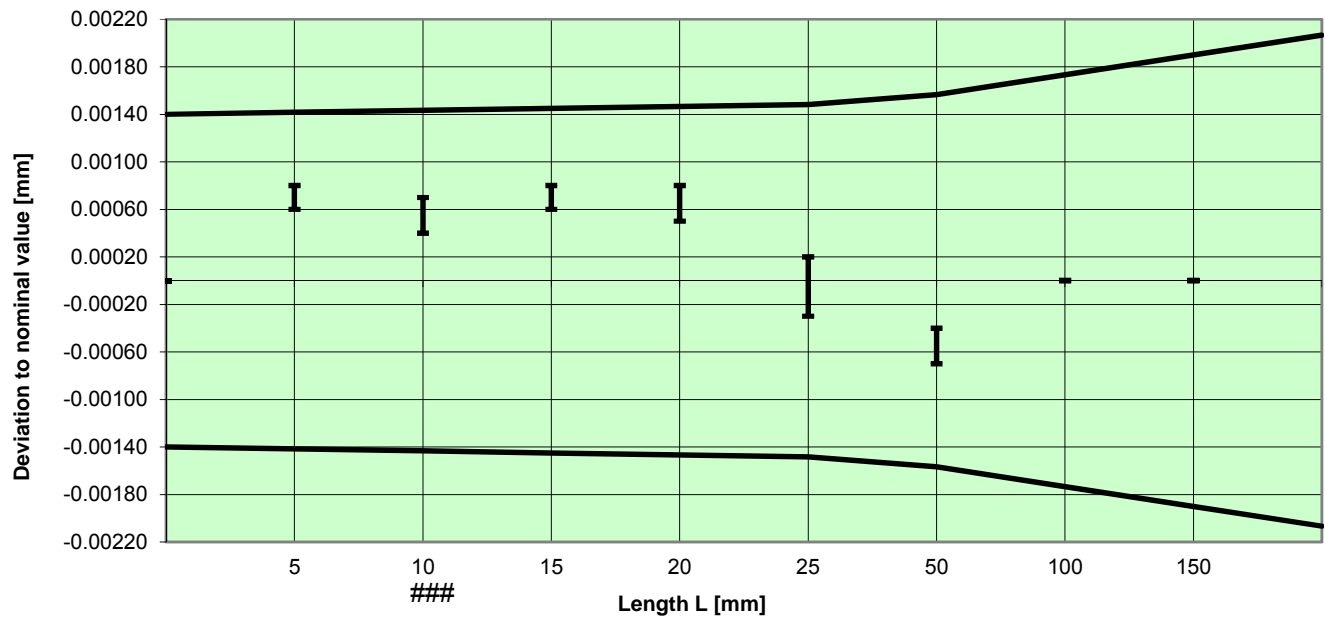
One dimensional measurement uncertainty (length)

$$\text{Tolerance } E1(L) = 1.4 \mu\text{m} \frac{L[\text{mm}]}{300.00} \mu\text{m}$$

Range of measurements (minimal required range  $R_{\text{min}} < 1 \mu\text{m}$ ):

$$R = 0.5 \mu\text{m}$$

**Measurement uncertainty according VDI 2617 sheet 6:**



### Evaluation: Machine meets specification according manufacturers standard

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### 3. Diameter measurement (horizontal) backlight camera 2

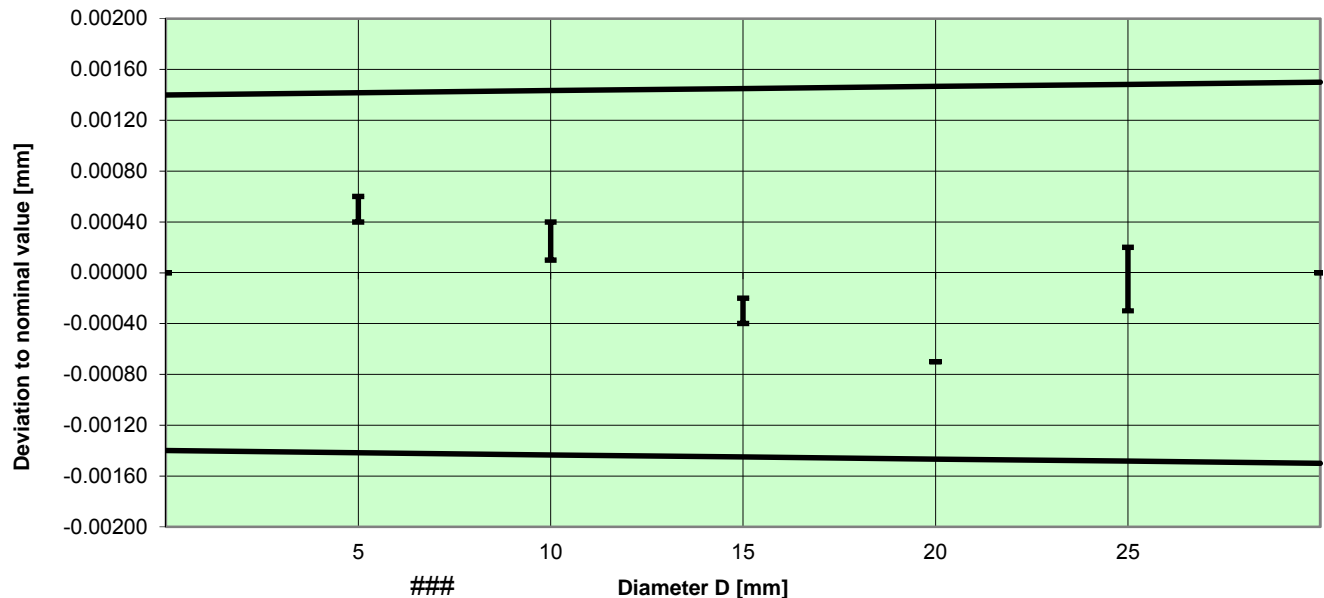
One dimensional measurement uncertainty (diameter)

$$\text{Tolerance } E1(D) = 1.4 \mu\text{m} \frac{D[\text{mm}]}{300.00} \mu\text{m}$$

Range of measurements (minimal required range  $R_{\text{min}} < 1 \mu\text{m}$ ):

$$R = 0.5 \mu\text{m}$$

**Measurement uncertainty according VDI 2617 sheet 6:**



**Evaluation: Machine meets specification according manufacturers standard**

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#### 4. Length measurement (vertical) backlight camera 2

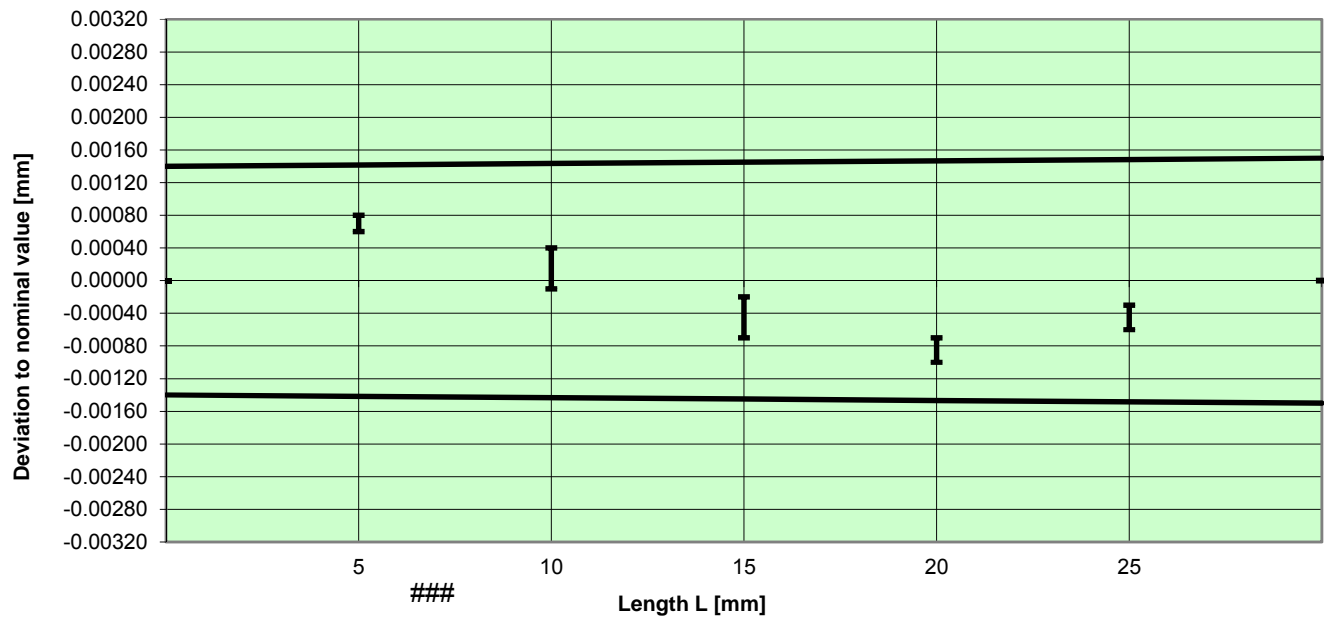
One dimensional measurement uncertainty (length)

$$\text{Tolerance } E1(L) = 1.4 \mu\text{m} \frac{L[\text{mm}]}{300.00} \mu\text{m}$$

Range of measurements (minimal required range  $R_{\text{min}} < 1 \mu\text{m}$ ):

$$R = 0.5 \mu\text{m}$$

**Measurement uncertainty according VDI 2617 sheet 6:**



#### Evaluation: Machine meets specification according manufacturers standard

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### 5.1. Angle measurement backlight camera

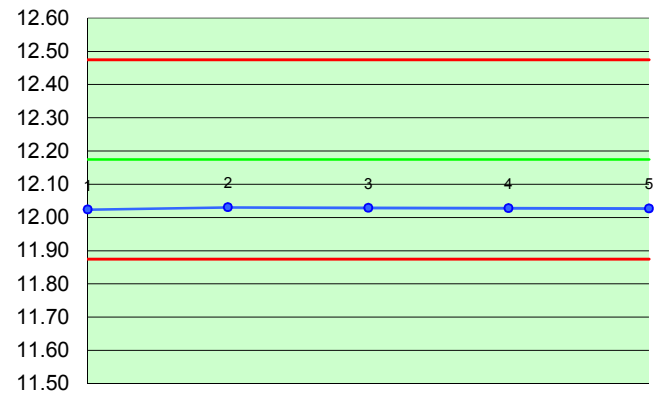
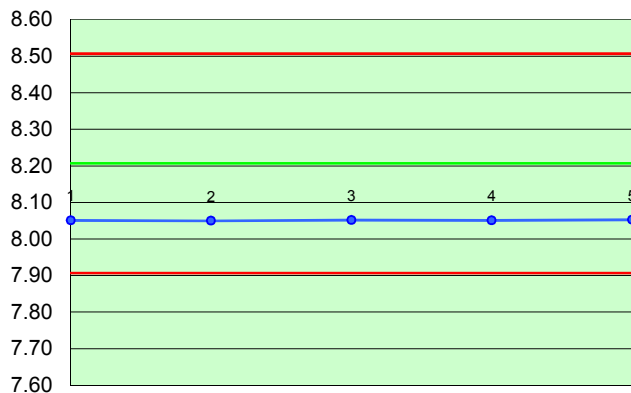
Minimal requirement: All repeatings have to be inside tolerance

#### Clearance-angle main cutting edge "B"

Tolerance  $t = 000^\circ$   
 Nominal value  $\alpha = 008^\circ$   
 USL; LSL =  $\alpha \pm t$

#### Clearance-angle main cutting edge "D"

Tolerance  $t = 000^\circ$   
 Nominal value  $\beta = 012^\circ$   
 USL; LSL =  $\beta \pm t$



**Evaluation: Repeatability meets specification according manufacturers standard**

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### 6.1. Angle measurement frontlight camera

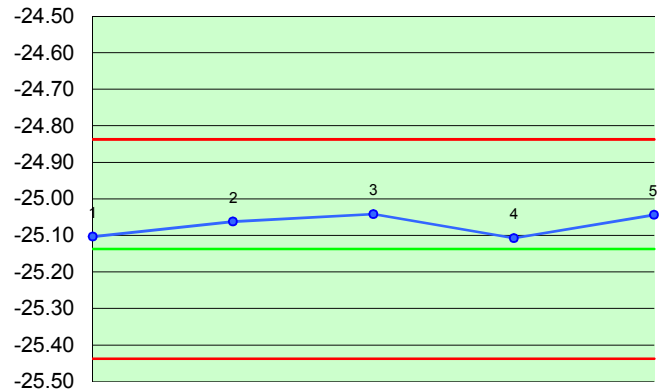
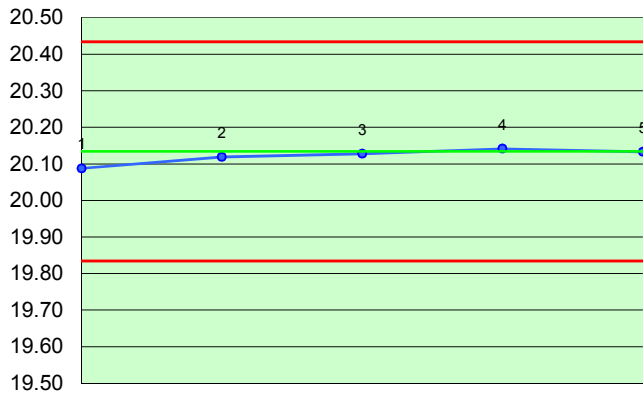
Minimal requirement: All repeatings have to be inside tolerance

#### Rake-angle main cutting edge "E"

Tolerance  $t = 000^\circ$   
 Nominal value  $\alpha = 020^\circ$   
 USL; LSL =  $\alpha \pm t$

#### Rake-angle main cutting edge "G"

Tolerance  $t = 000^\circ$   
 Nominal value  $\beta = -025^\circ$   
 USL; LSL =  $\beta \pm t$



**Evaluation: Repeatability meets specification according manufacturers standard**

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### 6.2. Angle measurement toplight camera

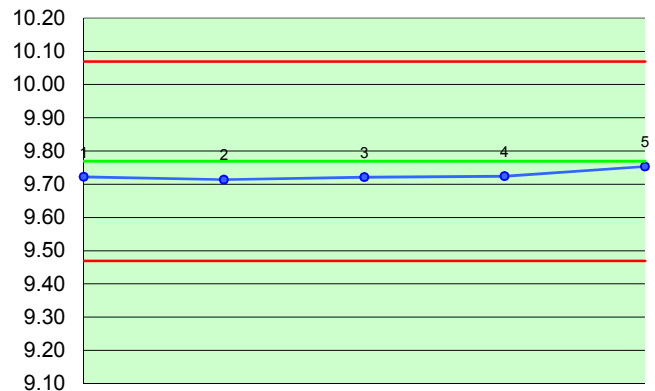
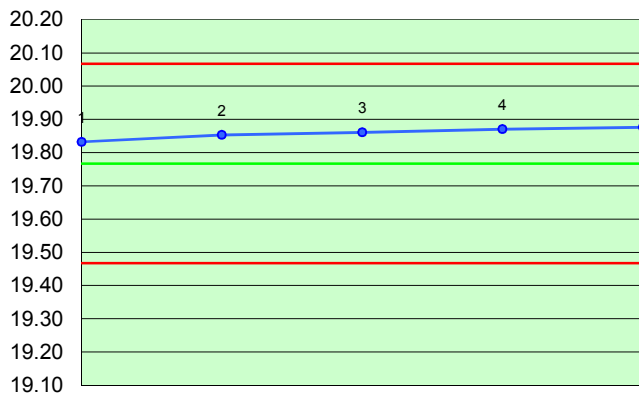
Minimal requirement: All repeatings have to be inside tolerance

#### Clearance-angle endface "B"

Tolerance  $t = 000^\circ$   
 Nominal value  $\alpha = 020^\circ$   
 USL; LSL =  $\alpha \pm t$

#### Clearance-angle endface "H"

Tolerance  $t = 000^\circ$   
 Nominal value  $\beta = 010^\circ$   
 USL; LSL =  $\beta \pm t$



**Evaluation: Repeatability meets specification according manufacturers standard**

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